Memorandum

From the Division of Planning, Policy & Regulation

Date September 24, 2003

To: Water Allocation Committee

From: Juan Mariscal, P. E.
Chair, Wastewater/Water Sub-Committee
Director, Planning, Policy & Regulation, NBC

Subject Report and draft recommendations
Wastewater/Water Sub-Committee, Water Allocation Committee

I am presenting this preliminary report on behalf of the Wastewater/Water Sub-Committee, however, the committee has not reviewed it or taken any actions on it. The purpose of this report is to provide some initial feedback to the Water Allocation Committee as to what discussions the Wastewater/Water Subcommittee have had as well as what types of recommendations may be forthcoming from the Subcommittee.

The initial focus of the Integrated Wastewater Water Committee was that we believed that opportunities existed to supplement the state's water supply by providing a "NEW" source of water, i.e. Nutrient Enriched Water – the effluent from publicly owned wastewater treatment facilities. This focus widened by including discussions and consideration of the reuse and recycling opportunities for storm water, industrial process water and so-called greywater (i.e. water from sinks, showers, etc.).

We began our deliberations with presentations by representatives from the Jamestown and Cranston Wastewater Treatment Facilities. The Jamestown WWTF has a successful project where a substantive portion of their treated effluent is reused on a seasonal basis at the Jamestown municipal golf course. The Cranston project involves the reuse of its effluent as cooling water for a power plant in Johnston. At this meeting in addition to committee members were wastewater treatment facility operators and pretreatment coordinators from around the state that we had invited.

At later meetings, the committee discussed other possibilities for the reuse of effluent, including: use at other golf courses, other power plants, nurseries, tree farms, turf farms, etc. In addition, to exploring opportunities, the committee was also concerned about impediments or requirements imposed by legislation, regulations and building codes. Committee members completed some research. Geographic factors and proximity of source of the water and the possible users were also outlined.

Out initial thinking was what was needed was we needed to prove that these reuse and recycling projects were practical and implementable, especially in Rhode Island. We tried to identify several types of demonstration projects to prove that these types of water reuse projects could actually be a substantive attractive supplement to existing water supplies. Discussions about some possible demonstration projects were initiated. A meeting was conducted with some possible participants for an Aquidneck Island project involving the reuse of wastewater on nursery and/or other non-food chain crops. At this time, the demonstration project has not been fully defined or scheduled.

In addition, the committee heard presentations on the Gillette Stadium and Wrentham Village Outlet mall where wastewater recycling systems are functioning at present. My staff and I visited a "green roofs" installation in at a recently renovated mill building in Providence. In addition, as part of a sewer connection permit application to the Narragansett Bay Commission I learned that a major public project in Providence is also proposing to install a green roof as part of the renovation of its historic building. These green roofs are designed to take stormwater from the roofs and use it for toilet and urinal flushing, lawn watering and/or roof top gardens or green space.. These systems typically include the use of a storage tank and pump that then distributes the recycled water on an as needed basis. Another major mill re-use project in Providence recently sponsored a green roofs workshop that my staff and I attended as did some IWW Committee members. A quick search of the internet (http://www.greenroofs.com) shows that "green roofs" are gaining considerable interest and being used for various reasons, including aesthetic and water conservation and reuse. At the recent green roofs workshop, it was noted that in Germany about 15% of all new and renovated flat roof buildings incorporate the green roof concept.

Another public project in Providence that my staff learned about during the review of its sewer connection permit application is planning to use roof drains to divert rainwater to storage tanks for later use in greenhouses. RIPTA presently uses a water recycling system for its bus washing operations that results in about 90% reuse of the water. Other commercial car washes also use recycling systems. Large commercial laundries have also implemented major recycling systems. One operations in the NBC district has recently put into operation a system that saves about 100,000 gallons of water a day.

Recently, my staff and I visited a Pawtucket manufacturing company that is pursuing recycling their process water for use on the company grounds (lawn, bushes, flowers). This company's proposal has been approved by DEM. In the NBC district we have a number of manufacturing operations that have so-called zero discharge systems, i.e.

treatment systems that result in an effluent that can be completely reuse in the manufacturing operations so that there is no discharge to the sewer system. While this system will result in a minor amount of water being recycled the company pursued this opportunity so as to reduce sewer discharge permit fees. Many other companies in the NBC district (and around the state) have been successfully using recycling and reuse systems for many years.

Finally, as part of the NBC's CSO abatement project, an evaluation is underway in a neighborhood on separating roof drains from the sanitary sewer system. In some cases, consideration is being given to re-directing the roof drains where possible to provide irrigation of lawns or gardens. In at least one home, the owner has installed rain barrels with pumps to store and then reuse the water when needed on lawns, gardens and other yard plantings.

What we learned from these existing projects is that there does not appear to be a need for a 'demo' project in Rhode Island since many different types of reuse/recycle projects presently exist and are successful. However, the major question is: "What is needed to encourage more of these types of projects? Other questions include: Are changes in legislation, regulations or building codes needed? Are financial and other incentives needed? Can reuse and recycle projects provide a substantive portion of the state's future water supply needs? How costly is it to implement a water reuse/recycle system?

While we do not believe there are any major impediments to water reuse or recycling n Rhode Island, the major issue in implementation may be the lack of knowledge of these types of systems to reduce overall water use.

Preliminary findings and recommendations for discussion and action by the Wastewater/Water Sub-Committee include:

- Wastewater reclamation, reuse and/or recycling for beneficial reuse should be incorporated in the state's overall strategy as
- Implementation and promotion of reuse options can be accomplished through a combination of mandatory water conservation requirements and incentives to augment existing water supplies.
- The Rhode Island Department of Environmental Management (DEM) Guidelines for Wastewater Reclamation and Reuse should be finalized and adopted. These guidelines should be reviewed and approved also by appropriate state agencies such as the Department of Health (DOH), if necessary.
- While demonstration projects are not needed to demonstrate the feasibility of reuse and recycle systems, the State should assert leadership in this regard and install reuse systems at high profile public lands and projects. Possibilities include the State House lawn (irrigation by stormwater) and the Quonset Point Industrial Park (reuse of wastewater treatment facility effluent for golf course and other vegetated areas, requirements for using green roofs on new developments)

- State legislation should be drafted and considered for requiring the use of green roofs, reuse and recycle systems for public building and all new commercial and industrial construction. As part of this legislation (or separate legislation) water use and reuse plans should be mandated as part of any building, sewer or water permit application to the appropriate municipal or regional agencies. These plans would require the consideration of green roofs, reuse and recycle systems. In addition, new residential developments over a defined size that require a significant amount of water use (to be defined), especially from stressed aquifers including housing developments, golf courses, and mixed use developments, should also be required to evaluate the feasibility of wastewater reclamation and reuse as part of a water use and reuse plan to reduce the impact of the development. This requirement should be incorporated into the Rhode Island Comprehensive Planning provisions, for all plans submitted, to be verified by the DEM or the Office of State Planning, water supplier and/or the local building inspectors
- The Water Resources Board should also serve as a centralized information source to both private developers and to the cities and towns in RI on water reuse and recycle systems. In order to implement these types of systems educational brochures and marketing of such systems should be included in the WRB's responsibilities.
- Legislation that provides incentives (via tax credits, expedited permit reviews, etc.) for reuse projects. Existing pollution control and/or prevention tax credit legislation may already address this need. These incentives would serve the dual purpose of encouraging water conservation through reuse as well as informing stakeholders that reuse is an accepted practice in Rhode Island.
- The Rhode Island Economic Development Corporation promote wastewater reclamation and reuse, as a guaranteed water source, through their Major Users Technical Assistance Program (MUTAP) for new projects as well as retrofits. Reuse efforts should be especially concentrated, as noted previously, at the state owned and managed Quonset/Davisville Port & Commerce Park where a cluster of industrial activities, a golf course, and a Wastewater Treatment Facility are in close proximity.
- The WAC Education Subcommittee should draft a preliminary outreach project that educates the general public, as well as public and regulatory officials, of the importance and benefits of reclaiming wastewater for beneficial reuse. It is well documented that public perception is an important component of a successful reuse program. There exist many excellent resources that detail the promotion of reuse programs that can be tailored for use and distribution in Rhode Island to address public health concerns.

Various members of this Subcommittee will serve on the Special Senate Commission to Study Wastewater Reclamation and Reuse in Rhode Island that was created in the Senate on July 2, 2003 and will commence in coming months. The Subcommittee will submit meet in the next few week and finalize recommendations. These recommendations will provide Senator Sosnowski, the chairperson, a framework for advancement of the further

study and implementation of an aggressive wastewater reuse and recycling program to enhance future water availability prospects for the people of Rhode Island.